



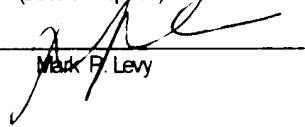
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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited in the United States Postal Service as first class mail in the envelope addressed to: Assistant Commissioner of Patents, Washington, D.C. 20231, on

2-14-02

(Date of Deposit)



27.922

Reg. No.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Reissue Application of

Applicant : Keegan et al.  
Serial No. : 09/965,142  
Filed : September 27, 2001  
Title : ALUMINUM METAL-CORE WELD WIRE AND METHOD FOR  
FORMING THE SAME  
Docket : 483471-009C1  
Examiner : Unassigned  
Art Unit : 1725

BOX DAC  
Assistant Commissioner of Patents  
Washington, D.C. 20231

*RECEIVED*

*MAR 6 2002*

*OFFICE OF PETITIONS*

Sir:

**PETITION UNDER 37 C.F.R. §1.47(a) - INVENTOR REFUSES TO SIGN**

This petition is accompanied by a Declaration executed by two of the three joint inventors identified in the captioned application filed in response to the Notice To File Missing Parts Of Application mailed October 23, 2001 (a copy of which is enclosed).

I. Action Requested

Petition is hereby made in the above-identified application under 37 C.F.R. 1.47 (*Filing when an inventor refuses to sign or cannot be reached*) to treat the captioned application, which

02/28/2002 GTEFFERA 00000141 09965142

03 FC:116

400.00 OP

02/28/2002 GTEFFERA 00000141 09965142

130.00 OP

01 FC:122

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has been executed by two of the three joint inventors, as having been filed by the signing joint inventors on behalf of themselves and the non-signing inventor.

II. Pertinent Facts

1. This application is a continuation-in-part (“CIP”) of U.S. Application Serial No. 09/685,106 filed October 10, 2000 (the “Parent Application”).
2. The CIP application was filed in unexecuted form September 27, 2001.
3. The inventorship of the Parent and CIP applications is the same. Sushil R. Jana executed the Parent Application but refuses to execute the CIP.
4. The Parent and CIP applications are commonly assigned to Illinois Tool Works Inc. Mr. Jana is no longer employed by the assignee of the Parent and CIP Applications. Mr. Jana is currently employed by a competitor of the assignee.
5. The application was forwarded to Mr. Jana for signature by letter dated November 7, 2001 together with a copy of his employment agreement. A copy of that letter is attached hereto as Exhibit A.
6. The undersigned received no reply to the letter of November 7, 2001.
7. A follow-up letter was mailed December 5, 2001 which is attached hereto as Exhibit B.
8. On December 6, 2001 the undersigned received a telephone call from Mr. Jana in which Mr. Jana requested the correction of certain errors in the formal documents only and expressly indicated he would sign the application if the corrections were made. By a letter dated

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December 6, 2001 (Exhibit C) the undersigned forwarded the corrected documents to Mr. Jana as he requested.

9. The undersigned received no reply to the letter of December 6, 2001. A follow-up letter was sent to Mr. Jana by Federal Express on December 18, 2001. A copy of that letter is attached as Exhibit D. Delivery of the letter to Mr. Jana was confirmed by Federal Express.

10. A further follow-up letter was sent to Mr. Jana by Federal Express on January 7, 2002. A copy of that letter is attached as Exhibit E. Delivery was confirmed by Federal Express.

11. On January 14, 2002, a letter dated January 8, 2002 was received from Mr. Jana in which he contends that he does not have sufficient background data to verify the statements in the application to permit him to sign the application. A copy of that letter is attached as Exhibit F.

12. On January 25, 2002, a reply was sent to Mr. Jana by Federal Express. In the reply Mr. Jana is advised that his co-inventors have attested to the accuracy of the information in the application and Mr. Jana is invited to telephone his co-inventors, at the expense of the assignee, to discuss the information that he requested. A copy of that letter is attached as Exhibit G.

12. On February 6, 2002 the undersigned received the attached letter dated February 5, 2002 in which Mr. Jana continues to refuse to sign the application. A copy of that letter is attached as Exhibit H.

III. Mr. Jana's last known address is:

Mr. Sushil R. Jana  
801 Wilson Avenue  
Hanover, PA 17331

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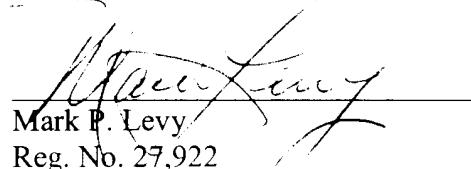
IV. Petition Fee

This paper is accompanied by a check which covers the Petition Fee.

V. Conclusion

In view of the foregoing, the undersigned petitions on behalf of the inventors, James M. Keegan and Sundaram Nagarajan to file this application on behalf of themselves and the non-signing Sushil R. Jana. In view of the foregoing, including the supporting evidence submitted herewith, grant of this petition is hereby requested. Please direct any questions regarding this Petition to applicant's undersigned attorney at the telephone number indicated below.

Respectfully submitted,

  
\_\_\_\_\_  
Mark P. Levy  
Reg. No. 27,922

THOMPSON HINE LLP  
2000 Courthouse Plaza NE  
10 West Second Street  
Dayton, Ohio 45402-1758  
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APPLICATION NUMBER	FILING RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
09/965,142	09/27/2001	James M. Keegan	483471-009C1

27805  
THOMPSON HINE L.L.P.  
2000 COURTHOUSE PLAZA, N.E.  
10 WEST SECOND STREET  
DAYTON, OH 45402

CONFIRMATION NO. 7345  
FORMALITIES LETTER



\*OC00000006959150\*

Date Mailed: 10/23/2001

**NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION**

**FILED UNDER 37 CFR 1.53(b)**

*Filing Date Granted*

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The signature of the following inventor(s) is missing from the oath or declaration:  
*Sushil R. Jana*
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(l) of \$130 for a non-small entity, must be submitted with the missing items identified in this letter.
- **The balance due by applicant is \$ 130.**

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- An abstract was not provided for this application. An abstract of the technical disclosure is required under 37 CFR 1.72(b).

**RECEIVED**

*A copy of this notice MUST be returned with the reply.*

MAR 04 2002

OFFICE OF PETITIONS

Customer Service Center  
Initial Patent Examination Division (703) 308-1202

PART 2 - COPY TO BE RETURNED WITH RESPONSE



November 7, 2001

COPY OF PAPERS  
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A

Sushil Jana  
801 Wilson Ave.  
Hanover, PA 17331

RE: U.S. Continuation-In-Part Patent Application entitled  
ALUMINUM METAL-CORE WELD WIRE AND METHOD FOR FORMING THE  
SAME  
Our Ref. 483471-009C1  
ITW Ref. 12979.70

Dear Mr. Jana:

As you may recall, you executed a patent application on behalf of Illinois Tool Works Inc. entitled Aluminum Metal Core Weld Wire and Method for Forming the Same. That application bares U.S. Application Serial No. 09/685,106 and was filed October 10, 2000. Your rights in that application were transferred to Illinois Tool Works Inc. by an Assignment which you executed October 27, 2000.

Recently, we filed a continuation-in-part of the aforementioned application. A copy of that continuation-in-part application is enclosed as Attachment A. This application discloses and claims the same invention as the application you previously executed, but additionally discloses additional subject matter. Because you were named an inventor on the earlier application, you are also named as an inventor on the continuation-in-part application.

Under your Employee Agreement with Illinois Tool Works Inc., you are obligated to execute patent applications and assignments relating to inventions made by you during the time of your employment. A copy of your Employee Agreement is enclosed as Attachment B. The aforementioned obligation is set forth in Article 2 of the agreement.

I am also enclosing a copy of a Declaration and an Assignment. In accordance with your Employee Agreement, I am asking that you execute these documents and return them to me for filing in the U.S. Patent and Trademark Office. An additional copy of the Declaration and Assignment is enclosed for your records. You can also retain the copy of the application for your records. A postage pre-paid envelope is provided for returning the executed Declaration and Assignment to me.

Please note that these documents contain confidential and proprietary information that you are precluded from sharing with anyone including, but not limited to, your current employer.

THOMPSON ●  
HINE ●

---

Sushil Jana  
November 7, 2001  
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If you have any questions regarding the foregoing matter, please feel free to give me a call.

Very truly yours,



Mark P. Levy

Enclosure

cc: John H. Pilarski, Esq. (w/encl.)  
Sundaram Nagarajan

**ALUMINUM METAL-CORE WELD WIRE  
AND METHOD FOR FORMING THE SAME**

**CROSS-REFERENCE TO RELATED APPLICATION**

This application is a continuation-in-part of U.S. Serial No. 09/685,106 filed October 10, 2000.

**BACKGROUND OF THE INVENTION**

The present invention relates to new and improved aluminum welding wire and more particularly to a metal-core aluminum welding wire which yields a high quality weld bead when used in welding components of aluminum articles.

Aluminum weld wire is conventionally provided as a solid wire that is generally produced by continuously casting round bars which are then heated to a temperature dependent on the alloy and rolled, for example, to 3/8 inch diameter. This rod is then drawn through a series of dies so that its diameter is reduced to the required size.

One of the problems that have been associated with weld deposits formed from aluminum weld wire is porosity. It is important that the weld beads be free of porosity. The porosity observed in aluminum welds has been attributed to a number of sources but one of the most prominent sources is voids caused by the release of hydrogen bubbles from the solidifying weld metal. These bubbles are caused by the introduction of hydrogen containing materials into the weld bead. During the welding, hydrogen-containing materials are decomposed and the hydrogen so produced dissolves in the molten metal. Upon solidification, the lower solubility of the hydrogen in the solid metal results in the rejection of hydrogen in solution and the production of small voids in the weld. It has been reported that hydrogen-containing materials may enter the weld bead from a number of sources but one of the principal sources is the welding wires themselves.

U.S. Patent 3,676,309 discloses an aluminum base alloy welding wire, which is coated with an alumina-phosphate coating having a low rate of hydration such that essentially porosity free welds are obtained. The aluminum welding wire may be prepared by immersing the wire in a first aqueous alkaline solution containing an anode strip, continuously immersing the wire in a second aqueous alkaline solution containing a cathode strip, and passing an electric current through the electrolytes while the wire is immersed therein. Thereafter the wire may be rinsed in

cold water, immersed in a passivating and neutralizing acid bath, and again rinsed. The second part of the process is an acid electrolytic treatment.

U.S. Patent 4,913,927 discloses an aluminum weld wire having an ultra clean aluminum surface, lubricated with a dual coating of an essentially anhydrous lower alkanol and a colloidal solid lubricant.

Japan Patent Publication (OPI) 6-304780-A to Isuzu Motors Ltd. K.K. discloses an aluminum weld wire that is tubular and filled with a flux. According to the publication the flux contains 5-10% sodium, 40-45% potassium, 5% or less oxygen, 5% or less sulfur, 5-10% fluorines, and 35-40% chlorines.

#### SUMMARY OF THE INVENTION

One embodiment of the present invention is aluminum metal-core wire. Metal-core weld wires are generally composite tubular metal electrodes having a metal sheath and a core in which the core contains a core composition of various powdered materials. The term "metal-core" is used here in as it is used in the welding wire industry to refer to a core composition that contains primarily metallic alloying powders with low amounts (less than about 5%) of non-metallic agents that form slag on the weld deposit. For example, see ANSI/ANS A5.9 Specifications for Bare Stainless Steel Welding Electrodes and Rods. In a more particular embodiment of the invention, the aluminum metal-core weld wire comprises an aluminum sheath and a core composition containing less than about 5% non-metallic components based on the weight of the wire. The term "non-metallic" refers to elements that are not metals or metalloids; for example, it refers to hydrogen, carbon, nitrogen, oxygen, phosphorous, sulfur, selenium and the halides. The aluminum metal-core weld wire of the invention is useful for joint and surface welding. Some of the advantages of metal-core weld wire are better penetration into the base metal and better arc transfer characteristics (as compared to solid weld wire). Better arc transfer characteristics include better arc stability, lower spatter and better arc initiation. While steel metal-core weld wire is well known and widely used in the welding industry, aluminum weld wire has not been available commercially as a tubular metal-core wire.

In a more particular embodiment of the invention, the core composition contains manganese nitride and/or barium. By incorporating barium and/or manganese nitride in the core composition, less porous and in some cases essentially nonporous welds can be formed. Barium is believed to reduce porosity by dissolving hydrogen and thus preventing hydrogen from

bubbling out of the weld upon solidification. Manganese nitride is believed to reduce porosity by releasing nitrogen upon welding. The nitrogen purges the hydrogen from the molten weld metal.

In manufacturing metal core wires, the core composition is blended and deposited onto a metal strip that is formed into a tube or sheath about the core composition in a forming mill. The sheath surrounding the core composition is drawn through reducing dies to a specified diameter. In order to perform the drawing operation, it is necessary to lubricate the outside surface of the sheath as it is pulled through the reducing dies. The lubricants that are conventionally used in forming steel tubular wire are organic and contain hydrogen. These lubricants are disadvantageous in forming aluminum metal core wire because the lubricants remain on the surface of the wire and break down during welding and release hydrogen. Unlike steel, molten aluminum has a high solubility for hydrogen. As a result, the released hydrogen readily dissolves in the molten aluminum weld deposit. When the weld deposit solidifies, the hydrogen is released and creates pores and channels in the weld rendering the weld unsuitable for most applications. In accordance with one embodiment of the present invention, this manufacturing difficulty is overcome by using an inorganic lubricant in the reducing dies. One lubricant of choice is molybdenum disulfide.

Another embodiment of the invention is a method for manufacturing aluminum metal-core wire which comprises the steps of depositing a metal core composition containing less than 5% nonmetallic elements (based on the total weight of the wire) onto a strip of aluminum, forming the strip of aluminum into a tube which contains the core composition, applying an inorganic lubricant to the surface of the tube, and drawing the tube through a plurality of reducing dies.

Another embodiment of the invention is an aluminum tube useful in forming an aluminum metal-core wire which comprises an aluminum sheath containing a core composition therein, wherein the outer surface of the aluminum sheath is coated with an inorganic lubricant and, more particularly in one embodiment of the invention, molybdenum disulfide. Another embodiment of the invention is a method for forming an aluminum tube useful in forming an aluminum metal-core wire wherein the formed sheath is cleaned in a bath of tetrachloroethylene (TCE) and baked at a temperature between about 280-500 °F typically for about 1 to 4 hrs. to remove hydrogen containing materials such as moisture and TCE from the surface of the wire.

Still another embodiment of the invention is a method for forming an aluminum weld which comprises applying a voltage to an aluminum metal-core wire in the vicinity or a work surface to generate an arc which melts the electrode and the work surface and forms the weld.

In addition to providing aluminum metal-core wire containing a core composition, an aluminum metal core wire is also provided which consists of the hollow aluminum tube or sheath and no core composition. This wire is useful in applications where the advantages of a metal-core wire are desired but the core composition is not required to modify the weld composition.

#### DETAILED DESCRIPTION OF THE INVENTION

The aluminum metal core wire of the present invention is formed from an aluminum strip, which is formed into a tube. The aluminum strip that is used in the invention can be formed from aluminum or any of the aluminum alloys that are commercially available. The 4000 and 5000 series aluminum alloys (as classified by The Aluminum Association) are often used to form the strip. Two alloys that are particularly desirable for forming the strip are 5056 and 5052. The latter is characterized in that it contains 2.2 to 2.8% Mg and the former is characterized in that it contains 0.05 to 0.2% Mn, 4.5 to 5.6% Mg, and 0.02 to 0.2% Cr. Aluminum strip is available in a number of thicknesses. Strip 0.4 inch wide and .028 inch thick has been found to be suitable for use in one embodiment of the invention. In some embodiments of the invention it may be desirable to use thicker strip in order to increase the stiffness of the wire. In these embodiments it may be desirable to use strip about .039 inch thick. The aluminum strip that is used in one embodiment of the invention ranges from about .250 to .650 in. wide and about .010 to .040 in. thick.

The composition of the weld wire can be adjusted to provide the weld properties and/or to be compatible with the work piece in a manner that is known in the art. Many of these compositions have been assigned AWS numbers. Two of the most widely used aluminum weld wires are ER 5356 and ER 4043. These weld wires contain at least about 4% and more typically about 4 to 6% magnesium or silicon. In two of the embodiments, the weld wires of the invention are composed such that they meet the specifications for these wires.

In accordance with a more general embodiment of the invention, in addition to aluminum, the aluminum metal core wires of the present invention may contain one or more of the following elements (based on percent by weight of the wire):

Table 1

	%
Si	0-15
Cu	0-7.0
Mn	0-1.5
Mg	0-5.5
Ti	0-10
Ba	0-0.5

Table 2<sup>1</sup>

	ER 4043	ER5356
Si	4.5-6.0	0.25 max.
Fe	0.8 max.	0.4 max.
Cu	0.3 max.	0.1 max.
Mn	0.15 max.	0.05-0.20
Mg	0.1	4.5-5.5
Cr	-	0.05-0.20
Ti	0.2 max.	0.06-0.20

In addition to the metals shown in Tables 1 and 2, in accordance with industry standards, the wire may contain limited amounts of Zn, Va, Be, Sn, Si, Fe, Zr. Generally, these metals will not exceed .005 to 0.45%. As industry standards change and/or new standards are adopted, the compositions of the weld, the wire, the sheath and the core composition are easily adjusted to accommodate them.

In a more specific embodiment of the invention the wires include manganese nitride and/or barium. It is desirable to use barium and manganese nitride alone or in combination in an amount sufficient to provide a weld that is essentially non-porous. Manganese nitride can be used in an amount up to about 6% of the core composition and is usually used in an amount of about 1 to 6%. Barium can be used in an amount up to about 1.5% of the core and is usually used in an amount of about 0.1 to 1.5%. Barium is preferably added to the core as CalSiBar in an amount up to 10% by weight of the core and usually in an amount of about 1 to 10%.

The sheath composition useful in select embodiments of the invention, in addition to aluminum may contain one or more of the following elements in the approximate weight percent (based on the sheath), illustrated in Table 3:

<sup>1</sup> A number followed by the term "max." refers to the maximum permitted level of an impurity.

Table 3

	General	Typical
Si	0-16.00	0-11
Fe	0-1.10	0-0.8
Cu	0-0.71	0-0.5
Mn	0-0.71	0.5
Mg	0-7.10	0-5.0
Cr	0-0.50	0-0.35
Zn	0-0.40	0-0.25
Ti	0-0.40	0-0.30

In the embodiments of the invention in which a core composition is used in the wire, the core composition can be adjusted, based on the sheath alloy composition, to provide a wire which meets the desired weld characteristics and more particularly meets one of the American Welding Society (AWS) classifications for aluminum electrodes and wires as published in AWS A5.10. The core composition in approximate weight % in one embodiment of the invention is illustrated in Table 4 (the "typical" formulations reflect AWS standards):

Table 4  
Powder Core Composition (%)

	General	Typical
Al powder	0-100.00	75-95.00
Si	0-4.0	0-4.0
Ca	0-2.0	0-2.0
Mn	0-6.0	0-1.60
Zr	0-2.5	0-1.00
Cr	0-3.33	0-40
Ti	0-10	0-3.00
Ba	0-1.5	0-1.5

The core composition may be prepared using  $K_3AlF_6$ , Ca-Si, Mn-N, Zr-Si and/or CalSiBar alloys. These alloys have the compositions shown in Table 4 below:

Table 4  
Alloy Compositions (%)

Alloy	Ca	Si	Fe	N	S	O	Mn	Zr	C	Al	Ba
Ca-Si	31.5	62.5	5.5	0	0	0	0	0	0.50	0	0
Mn-N	0	0	0	6.00	.30	.50	Bal	0	0	0	0
Zr-Si	0	50.8	10.3	0	0	0	0	38.4	0.50	0	0
Cal SiBar	17.1	57.6	8.16	0	0.39	0	0	0	0.50	1.06	15.5

The core composition, when it is present, generally constitutes about 6 to 25% total weight of the aluminum core wire and more typically about 7 to 9 %. In some of the more typical embodiments of the invention, the powders and particles making up the core composition will have an average particle size of about 45 micron to 250 micron. Uniform distribution of the core composition in the drawn aluminum wire affords uniformity of the weld deposit.

Aluminum core wire can be manufactured using wire manufacturing equipment and conditions similar to those used in the manufacture of conventional metal core wire. Aluminum strip is drawn through forming rolls. The rolls typically include 3 pair of rolls having a forming groove therein which roll the strip into a "U" shaped tube. The tube is filled with the metal powder and formed to create a wire. The closing rolls typically have the following diameter sequence: .160 in .150 in .140 in and .130 in. The strip must be lubricated as it is moved through this forming die set but because so little of this lubricant remains on the surface of the wire after the downstream drawing operation, this lubricant can be a conventional lubricant such as a silicone oil like Dow Corning 200. The strip is generally run through the forming rolls at a rate of about 40 to 200 feet per minute and more typically at a rate of 44 fpm.

Downstream from the forming die, the strip is drawn through a series of reducing dies, typically about 7 to 8 dies which progressively become smaller in diameter from an initial diameter of about .146 inch to a final diameter of about .062 inch. In one case, these dies by diameter (inch) have the sequence: .146, .120, .109, .097, .082, .069, and .062. As the strip is drawn through the reducing dies it is lubricated with a hydrogen-free lubricant. In one embodiment of the invention the lubricant is molybdenum disulfide. In another embodiment it is tungsten disulfide. The rolled strip is generally drawn through the reducing dies at a rate of about 100 to 1000 feet per minute.

The invention will be illustrated in more detail by the following non-limiting examples:

Examples. Aluminum metal core weld wires were prepared using a 5056 aluminum alloy to form the sheath and the following core compositions:

Table 5  
Core Compositions

Ex. No.	1	2	3	4	5	6
Al powder	78.00	87.00	86.00	80.00	92.00	77.00
Ca/Si alloy	2.00	0.00	2.00	2.00	2.00	0.00
Ti	10.00	2.00	2.00	10.00	3.00	10.0
Mn-N alloy	6.00	6.00	0.00	6.00	1.60	6.0
Zr/Si alloy	1.00	1.00	1.00	1.00	1.00	1.00
Cr	1.00	1.00	1.00	1.00	.40	0.00
Silicon	0.00	1.00	0.00	0.00	0.00	0.00
KAlF	2.00	2.00	2.00	0.00	0.00	0.00
Mn	0.00	0.00	6.00	0.00	0.00	0.00
Ba/Si	0.00	0.00	0.00	0.00	0.00	6.00
Total	100.00	100.00	100.00	100.00	100.00	100.00

The best weldability with minimum porosity was obtained with Examples 5 and 6. Examples 1-3 exhibited some porosity. Example 4 exhibited no porosity.

Having described the invention in detail and with reference to specific embodiments thereof, it will be apparent that numerous modifications and variations are possible without departing from the scope of the invention as defined by the following claims.

What is claimed is:

1. An aluminum metal-core weld wire for producing aluminum weld deposits, the weld wire comprising a sheath and a core, the sheath being aluminum or aluminum alloy and the core containing a composition which includes metal or metal alloy powders.
2. The aluminum weld wire of claim 1 wherein, in addition to aluminum, the wire contains in approximate weight percent:

Si	0-15
Cu	0-7.0
Mg	0-6.0
Mn	0-1.5
Ba	0-0.5

3. The aluminum weld wire of claim 1 wherein, in addition to aluminum, the wire contains in approximate weight percent:

Si	0-15
Cu	0-7.0
Mg	0-6.0
Mn	0-1.5

4. The aluminum weld wire of claim 1 wherein, in addition to aluminum, the wire contains in approximate weight percent:

Si	0-15
Cu	0-7.0
Mg	0-6.0
Ba	0-0.5

5. The aluminum weld wire of claim 1 wherein the weld wire contains magnesium or silicon in an amount of at least 4% by weight of the wire.

6. The aluminum weld wire of claim 5 wherein, in addition to aluminum, the wire contains in approximate weight percent:

Si	4.5-6.0
Fe	0.8 max.
Cu	0.3 max.

Mn	0.15 max.
Mg	0.1
Ti	0.2 max.

7. The weld wire of claim 5 wherein, in addition to aluminum, the wire contains in approximate weight percent:

Si	0.25 max.
Fe	0.4 max.
Cu	0.1 max.
Mn	0.05-0.20
Mg	4.5-5.5
Cr	0.05-0.20
Ti	0.06-0.20

8. The aluminum weld wire of claim 1 wherein the sheath is formed from a 4000 or 5000 series aluminum alloy.

9. The aluminum weld wire of claim 8 wherein the sheath is formed from a 5052 or 5056 aluminum alloy.

10. The aluminum weld wire of claim 1 wherein the core composition has the following composition in approximate weight percent:

	%
Al powder	0-100.00
Si	0-4.0
Ca	0-2.0
Mn	0-6.0
Zr	0-2.5
Cr	0-3.33
Ti	0-10
Ba	0-1.5

11. The aluminum weld wire of claim 1 wherein the core composition has the following composition in approximate weight percent:

	%
Al powder	75-95.00
Si	0-4.0
Ca	0-2.0

Mn	0-1.60
Zr	0-1.00
Cr	0-.40
Ti	0-3.00
Ba	0-1.5

12. The aluminum weld wire of claim 1 wherein the core composition contains barium.
13. The aluminum weld wire of claim 10 wherein the core composition contains up to 1.5% barium.
14. The alumin unweld wire of claim 13 wherein the core composition contains a powder of a barium-containing alloy.
15. The aluminum weld wire of claim 14 wherein the barium-containing alloy is selected from the group consisting of BaSi or CaSiBar.
16. The aluminum weld wire of claim 1 wherein the core composition contains MnN.
17. The aluminum weld wire of claim 16 wherein the core composition contains up to 6% MnN.
18. A method for manufacturing aluminum metal-core wire which comprises depositing a core composition onto a strip of aluminum, forming the strip of aluminum into a tube which contains the core composition, applying an inorganic lubricant to the surface of the tube, and drawing the tube through a plurality of reducing dies.
19. The method of claim 18 wherein the lubricant is molybdenum disulfide.
20. The method of claim 18 wherein the method includes the additional step of cleaning the surface of the tube with tetrachloroethylene.
21. The method of claim 18 wherein the method includes the additional step of drying the tube.

22. An aluminum tube useful in forming an aluminum metal-core wire which comprises an aluminum sheath containing a core composition therein, wherein the outer surface of the aluminum sheath is coated with an inorganic lubricant.
23. The aluminum tube of claim 22 wherein the lubricant is molybdenum disulfide.
24. A method for forming an aluminum weld which comprises applying a voltage to an aluminum metal-core wire in the vicinity of an aluminum work surface to generate an arc which melts the wire and the work surface and forms the weld.
25. An aluminum weld wire for producing aluminum weld deposits, the weld wire consisting of a tubular sheath of aluminum or aluminum alloy.

211872

Sep-21-01 08:45 Tubular Wire Engineering 937.332.5471

P.01

Hobart Brothers Company  
Filler Metals Operations  
101 Trade Square East  
Troy, Ohio 45373-2488  
Telephone: 937.332.4000

FILE  
ITW 12979.70

**ITW** Welding Products Group

March 12, 1997

Sushil Jana

**SUBJECT: PRODUCT & PROCESS ENGINEERING & DEVELOPMENT**

New and differentiated products are the lifeblood of our company and are required to further improve our position in the marketplace. We see new product and process development as the foundation for future growth of our business. On behalf of ITW, we thank you for the contributions you've made in this endeavor. Additionally, to further extend our sincere appreciation for your efforts and to further demonstrate our commitment to you and our engineering resources, we are pleased to outline the following changes.

- A special area of concern for us is that we stay competitive, both internally and externally, with our overall level of compensation. As you know, with the help of ITW, in the benefits area, significant improvements were made with the 401(k) and with the introduction of the pension plan.
- Through your accomplishments and contributions, you have been identified as a technological leader with high potential in our engineering area. To recognize you, we're pleased to inform you that you will be eligible for a bonus potential of 10% of your year-end salary based on meeting mutually established goals. We're pleased to confidentially offer you this opportunity for special recognition. It's well deserved. Further details of the plan will follow.
- Your career and overall development is quite important to us. The next several points address this issue:
  - ⇒ Engineering titles and salary ranges. We've established new engineering titles and aligned them in new ranges which will enable you to have greater earning potential, again based on your contributions. Please see the attached sheet which will list the respective titles and ranges.

- ⇒ Based on your credentials, we feel it is appropriate for you to be recognized and to use the title of Research Engineer.
- ⇒ Career planning: As we grow as a company, we want you to have challenging individual career growth. We've aligned several resources to help accomplish this. They include:
  - ⇒ Max Pierre will meet with you in the near future, on a one-on-one basis to help establish and identify a career growth plan.
  - ⇒ Ed Thompson, an outside consultant, who has successfully worked with ITW companies over many years, will be available to conduct group career development sessions and will be available for individual development discussions, if so desired.
- ⇒ Dual career opportunity: We are working to identify ways to have professional technical growth in terms of recognition, titles and compensation that can be obtained in the technical areas that will parallel the progress, recognition and compensation that our managers achieve. It's important for you to be fulfilled in these areas, and you can possibly achieve this by staying in the technical field, rather than feeling obligated to consider the management track in order to achieve the recognition you may desire.
- ⇒ Patent Recognition: ITW places a high premium on patents. If you create value for the company that can be protected and a patent is assigned, you will be invited to become a member of ITW's prestigious Patent Society.
- ⇒ Professional Associations: We'll continue to support your active participation in the appropriate professional associations.
- ⇒ Seminars: We'll continue to support your attendance in either technical or business related seminars. We'll work with you to discuss seminars that you identify that may be of interest to you.

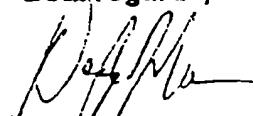
We highly value the technical and proprietary knowledge that you possess and hope we have demonstrated our commitment to you. We are striving to develop a professional atmosphere where engineers can grow and develop at Hobart and hopefully you'll want to stay. However, to protect the overall interests of Hobart and the many people who work here, we are asking you to read, sign and return the attached non-compete agreement by April 4, 1997. While it is lengthy, we believe you'll find it to be very fair. We value you and in exchange of signing this document, we'll provide you with a check for \$1,000.

For your information, all new engineering hires will be required to sign this document prior to starting with us.

In summary, we hope that you are excited about the career development opportunities and other changes we've outlined above. We're committed to your growth and we would like to celebrate the accomplishments of our engineers at a dinner to be arranged in April (details to follow).

Again, thanks for your past contributions and we look forward to a bright and prosperous future.

Best regards,



Doug Moore  
Executive Vice President



Andre Odermatt  
Senior Vice President  
Product and Process Development

cc: Dennis Martin  
Mike Weller  
Max Pierre  
Business Unit Manager

Attachment: Engineering Titles and Ranges  
Employee Agreement (non-compete)

dmsj  
lcs

**HOBART BROTHERS COMPANY  
EXEMPT AND NON-EXEMPT SALARY STRUCTURE  
EFFECTIVE JANUARY 1, 1997**

<b>POSITION LEVEL</b>	<b>MINIMUM 80%</b>	<b>MIDPOINT 100%</b>	<b>MAXIMUM 120%</b>
M	\$32,748	\$40,934	\$49,121
N	\$36,042	\$45,053	\$54,064
O	\$39,658	\$49,572	\$59,485
P	\$43,592	\$54,490	\$65,388
Q	\$47,951	\$59,938	\$71,926
R	\$52,735	\$65,919	\$79,102
S	\$58,052	\$72,564	\$87,077

## EMPLOYEE AGREEMENT

In accepting or continuing employment with Hobart Brothers Company, a wholly-owned subsidiary of Illinois Tool Works Inc. ("Hobart") I bind myself to the following obligations in consideration of the wages and benefits provided to me by Hobart and for my being given access to Trade Secret and Confidential Information.

1. In this Agreement:

a. "Hobart" means Hobart Brothers Company, a wholly-owned subsidiary of Illinois Tool Works Inc. and all divisions and subsidiaries owned or controlled by Hobart Brothers Company or under common control with Hobart Brothers Company anywhere in the world.

b. "Trade Secret" means the whole or any portion or phase of any of Hobart's scientific or technical information, designs, processes, procedures, formulae, or improvements that is valuable and secret in the sense that it is not generally known to competitors of Hobart. To the extent consistent with the foregoing definition, Trade Secret includes, without limitation, the specialized information and technology I may develop or acquire with respect to Hobart's products, processes, manufacturing, engineering, research, equipment, and applications.

c. "Confidential Information" means competitively sensitive information possessed by Hobart about Hobart and its business activities not generally known to competitors of Hobart which is used or is useful in the conduct of Hobart's business, and which confers or tends to confer a competitive advantage to Hobart over one who does not possess the information. To the extent consistent with the foregoing definition, Confidential Information includes information about existing, new or envisioned Hobart products and processes and their development and performance, scientific, engineering, or technical information, computer software and firmware, internal business plans and financial information, and internal information relating to manufacturing, purchasing, inventories, data processing, personnel, marketing, sales and service, pricing, costs, and quotations. Confidential Information also includes such information received by Hobart from others which Hobart has an obligation to treat as confidential.

d. "Invention" means any discovery, improvement or idea (whether or not described in writing or reduced to practice, and whether patentable or not) made solely by me or jointly with others, while an employee of Hobart or during a period of one year thereafter; (1) relating to any of Hobart's products, processes, manufacturing, engineering, research, equipment, applications or other activities or investigations; or (2) relating to ideas work or investigations conceived or carried on by me in connection with or because of my employment with Hobart.

e. "Work of Authorship" means any literary, pictorial, sculptural, graphic, audio or visual work, whether published or unpublished, and whether copyrightable or not, in

whatever form and in whatever media, originated solely by me or jointly with others while an employee of Hobart or during a period of one year thereafter; (1) relating to any of Hobart's products, processes, manufacturing, engineering, research, equipment, applications or other activities or investigations; or (2) relating to ideas, work or investigations conceived or carried on by me in connection with or because of my employment with Hobart.

2. If I make an Invention, originate a Work of Authorship, or create Trade Secret or Confidential Information it shall, without further payment, immediately become the property of Hobart; and, further, I shall:

a. Communicate to Hobart promptly and fully all Inventions made, all Works of Authorship originated, and all Trade Secrets or Confidential Information created; and give Hobart all documents and things embodying or describing same;

b. Execute patent application, copyright applications, assignments, and other documents relating to each Invention, Work of Authorship and Trade Secret or Confidential Information necessary or proper to vest ownership in Hobart and to obtain, maintain and enforce Letters Patent, Certificates of Copyright Registration and other proprietary rights to same throughout the world; and

c. Give affidavits and testimony as to facts within my knowledge in connection with any such Inventions, Works of Authorship and Trade Secrets or Confidential Information in any administrative proceedings, arbitration, litigation or controversy relating thereto.

3. Except as required by my duties to Hobart I will not, either during my employment with Hobart or thereafter, use or disclose or authorize others to use or disclose or permit any person to obtain any Trade Secret. Upon termination of my employment with Hobart, all things and documents containing any Trade Secret, whether made by me or others, including copies thereof in my possession will be left with Hobart. This paragraph shall continue to bind me during my employment with Hobart and thereafter only so long as such information remains a Trade Secret.

4. Except as required by my duties to Hobart, I will not, either during my employment with Hobart or for a period of eighteen months thereafter, use or disclose or authorize others to use or disclose or permit any person to obtain any Confidential Information. Upon termination of my employment with Hobart, all things and documents containing Confidential Information, whether made by me or others, including copies thereof in my possession will be left with Hobart. This paragraph shall continue to bind me during my employment with Hobart and thereafter for said eighteen month period only so long as such information remains Confidential Information.

5. I promise that during the period of my employment with Hobart I will not take any other employment or participate in activities that conflict with my duty of loyalty as an employee of Hobart.

6. If I have been employed with Hobart in any technical capacity involving research, development, engineering, manufacture, evaluation, testing, installation, or service relating to any existing or proposed Hobart product, process, or service, I promise that during my employment and for a period of eighteen months immediately following the termination of my employment with Hobart, I will not become engaged in a technical, promotional, or supervisory capacity for a Conflicting Organization (as defined below) with respect to a Conflicting Product (as defined below) in any territory where, as of the date of the Agreement, Hobart promotes or sells such product, process, or service or a related product, process, or service.

"Conflicting Organization" means any person, including myself, or organization, or business unit of any organization, who or which is engaged in, or about to become engaged in, research or development, production, marketing, selling, or servicing of a Conflicting Product.

"Conflicting Product" means any product, process, or service which competes with the existing or proposed products, processes, or services of Hobart. (a) upon which I have worked or have been associated with during any part of the five (5) years immediately preceding the termination of my employment with Hobart: or (b) about which I have acquired or created Trade Secret or Confidential Information.

7. If I have been employed by Hobart in a staff, management, or supervisory capacity relating to any existing or proposed Hobart product, process or service, I promise that during my employment and for a period of eighteen months immediately following the termination of my employment with Hobart, I will not render services similar to those I rendered to Hobart for a Conflicting Organization (as defined below) with respect to a Conflicting Product (as defined below) in any territory where, as of the date of this Agreement, Hobart promotes or sells such product, or service or a related product, process or service.

"Conflicting Organization" means any person, including myself, or organization, or business unit of any organization, who or which is engaged in, or is about to become engaged in, research or development, production, marketing, selling, or servicing a Conflicting Product.

"Conflicting Product" means any product, process, or service which competes with the existing or proposed products, processes, or services of Hobart: (a) for which I have had staff, management, or supervisory responsibility or assignment for Hobart during any part of the five (5) years immediately preceding the termination of my employment with Hobart: or (b) about which I have acquired or created Trade Secret or Confidential Information.

8. I understand that this Agreement applies regardless of whether there are later changes in my job duties, location or division assignment and that it applies to each and any employment with Hobart regardless of the number or dates of changes in my employment with Hobart. I understand that this Agreement applies to any documents or Trade Secret or Confidential Information received, or any Invention conceived, or Work of Authorship made, by me during my employment with Hobart.

9. If I am unable to obtain employment consistent with my abilities and education within one month after termination of my employment with Hobart because of the provisions of paragraphs 6 or 7, such provision shall thereafter continue to bind me only as long as Hobart shall make payments to me equal to three-fourths of my monthly base pay at termination (exclusive of extra compensation, bonus, or employee benefits) for each month of such unemployment (or pro rata for periods less than a month) commencing with the second month after termination of my employment with Hobart. 75%

During each month of such unemployment, I will make reasonable efforts to find employment; and I will, within ten days after the end of each calendar month for which I seek payment, give Hobart a detailed written account of my efforts to obtain employment. Such account will include a demonstration by me that although I sought employment conscientiously and aggressively, I was unable to obtain it because of the provisions of paragraphs 6 or 7. Hobart shall, at its option, be relieved of making a monthly payment to me for any month during which I failed to seek employment conscientiously and aggressively and to account to Hobart as provided for above.

Hobart is obligated to make such payments to me, upon my fulfillment of the conditions set forth above, for seventeen (17) consecutive months unless Hobart gives me written permission to accept available employment, or gives me a written release from the obligations of paragraphs 6 or 7. Hobart's obligation to make such monthly payments shall terminate upon my death or upon my obtaining employment. I agree that I will give prompt written notice of such employment to Hobart.

Hobart shall not be liable under this Agreement, or any action relating thereto, for any amount greater than the equivalent of seventeen (17) such monthly payments. Hobart is not obligated to make a payment to me for the first month of such unemployment.

10. I understand that even though Hobart has various offices and divisions throughout the country and the world, Hobart nevertheless is principally an Ohio-based company. As a Hobart employee, I may transfer between various Hobart offices and divisions located in different states and countries. Therefore, regardless of where I may be employed or transferred, this Agreement will be interpreted and construed in accordance with the laws of the State of Ohio so that everyone will be certain of their obligations should disputes ever arise.

11. This Agreement shall be construed as an addition to any obligations or legal or equitable remedies existing by law, e.g., the law of trade secrets, and shall not be construed as being a limitation upon such obligations or remedies. Should any paragraph, sentence, or any portion of a paragraph or sentence of this Agreement be judicially held to be invalid, unenforceable, or void, such holding shall not have the effect of invalidating or voiding the remainder of the sentence, paragraph and Agreement. I also understand that should Hobart waive any violation or breach of my obligations to it, it shall not be considered a waiver of any succeeding breach or of the obligation so breached. Further, any claim I may have against Hobart shall not constitute a defense to enforcement by Hobart of this Agreement.

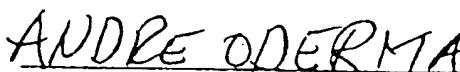
12. I understand this Agreement supersedes all previous like agreements between the parties and shall both bind and benefit Hobart, its successors and assigns as well as myself, my heirs, executors and administrators. The covenants in this Agreement shall survive termination of my employment with Hobart, regardless of who causes the termination and under what circumstances.

13. This Agreement may not be waived, changed, modified, abandoned or terminated, in whole or part, except by an instrument in writing signed by an officer of Hobart.

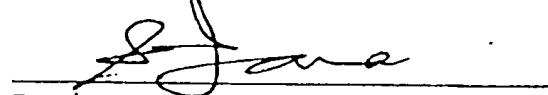
I understand that this Agreement becomes binding upon acceptance by Hobart at its corporate headquarters in Troy, Ohio.



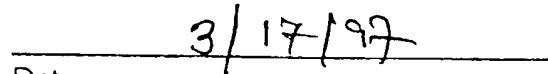
Witness Signature

  
ANDRE ODERMATT

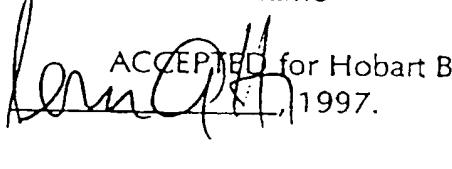
Witness Printed Name

  
Linda

Employee's Signature

  
3/17/97

Date

  
ACCEPTED for Hobart Brothers at Troy, Ohio this 17th day of MARCH  
1997

## DECLARATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the invention entitled:

### **ALUMINUM METAL-CORE WELD WIRE AND METHOD FOR FORMING THE SAME,**

described and claimed

X in the attached specification;  
\_\_\_\_ in the specification filed \_\_\_\_\_,  
as U.S. Application Serial No. \_\_\_\_\_,  
and as amended \_\_\_\_\_.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as filed and as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

### **PRIORITY CLAIM**

I hereby claim foreign priority benefits under title 35, United States Code, §119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application(s) for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

<u>Prior Foreign Application(s)</u>		<u>Priority Claimed</u>		
number	Country	Day/Mo/Yr	Yes	No
number	Country	Day/Mo/Yr	Yes	No

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below.

Application No.	Filing Date
Application No.	Filing Date

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

09/685,106	October 10, 2000	Pending
Application Serial No.	Filing Date	Status
Application Serial No.	Filing Date	Status

Send Correspondence To:

Mark P. Levy  
Thompson Hine LLP  
2000 Courthouse Plaza N.E.  
10 West Second Street, Dayton, Ohio 45402-1758

Direct Telephone Calls To:

Mark P. Levy  
(937) 443-6949

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Full name of sole or first Inventor – James M. Keegan

Inventor's Signature \_\_\_\_\_ Date \_\_\_\_\_

Residence: 764 Windsor Road, Troy, Ohio 45373

Citizenship: U.S.A.

Post Office Address: Illinois Tool Works, Inc.  
3600 West Lake Avenue  
Glenview, Illinois 60025-5811

Full name of second Inventor – Sundaram Nagarajan

Inventor's Signature \_\_\_\_\_ Date \_\_\_\_\_

Residence: 3204 Gardenia Drive, Troy, Ohio 45373

Citizenship: U.S.A.

Post Office Address: Illinois Tool Works, Inc.  
3600 West Lake Avenue  
Glenview, Illinois 60025-5811

Full name of third Inventor – Sushil R. Jana

Inventor's Signature \_\_\_\_\_ Date \_\_\_\_\_

Residence: 801 Wilson Avenue, Hanover, PA 17331

Citizenship: U.S.A. India

Post Office Address: Illinois Tool Works, Inc.  
3600 West Lake Avenue  
Glenview, Illinois 60025-5811

212524

Serial No.

Filed:

**ASSIGNMENT**

WHEREAS, **James M. Keegan**, of the City of Troy, County of Miami and State of Ohio; **Sundaram Nagarajan**, of the City of Troy, County of Miami and State of Ohio; and **Sushil R. Jana**, of the City of ~~Troy~~, County of ~~Miami~~ and State of ~~Ohio~~, invented certain new and useful **ALUMINUM METAL-CORE WELD WIRE AND METHOD FOR FORMING THE SAME** (Docket No. 483471-009C1) for which I/we executed an application for letters patent of the United States;

AND WHEREAS, **Illinois Tool Works Inc.**, a corporation of the State of Illinois, with a place of business at 3600 West Lake Avenue, Glenview, Illinois, hereinafter called the Assignee, is desirous of acquiring the entire right, title and interest in and to said application and the inventions therein disclosed and any letters patent that may issue thereon;

NOW, THEREFORE, in consideration of the sum of One Dollar (\$1.00) and other valuable consideration, receipt whereof is hereby acknowledged, I/we hereby sell, assign and transfer unto said Assignee, its successors and assigns, the entire right, title and interest in and to said application and any divisions or continuations thereof, and the inventions therein disclosed, and any improvements thereon, and any patent or patents that may be issued or reissued thereon, and I/we hereby authorize and request the Commissioner of Patents and Trademarks to issue any letters patent thereon, and reissues thereof, to said Assignee, its successors and assigns; and I/we hereby authorize said Assignee, its successors and assigns, to file in its own name applications for patent in foreign countries in connection with the inventions hereby transferred, under the International Convention claiming the priority of said United States application or otherwise, and to secure in its own name the patent or patents issued thereon; and I/we hereby agree that, upon request, I/we will sign all papers, and make all rightful oaths, and do all acts which said Assignee, its successors or assigns, may consider necessary in connection with said United States application, and in connection with any other United States or foreign applications that may be filed in connection with said inventions, and with any improvements thereon, and in connection with any patents issued or reissued thereon.

IN TESTIMONY WHEREOF, I hereunto set my hand and seal this \_\_\_\_\_ day of \_\_\_\_\_, 2001.

James M. Keegan

STATE OF \_\_\_\_\_) )  
COUNTY OF \_\_\_\_\_) ss

On this \_\_\_\_\_ day of \_\_\_\_\_, 2001,  
before me a Notary Public in and for the above County and  
**James M. Keegan**, personally known to me, and acknowledged  
the execution of the foregoing assignment as a free act and  
deed for the purpose herein set forth.

Notary Public

IN TESTIMONY WHEREOF, I hereunto set my hand and seal this  
\_\_\_\_ day of \_\_\_\_\_, 2001.

Sundaram Nagarajan

STATE OF \_\_\_\_\_) )  
COUNTY OF \_\_\_\_\_) ss

On this \_\_\_\_\_ day of \_\_\_\_\_, 2001,  
before me a Notary Public in and for the above County and  
**Sundaram Nagarajan**, personally known to me, and acknowledged  
the execution of the foregoing assignment as a free act and  
deed for the purpose herein set forth.

Notary Public

IN TESTIMONY WHEREOF, I hereunto set my hand and seal this  
\_\_\_\_ day of \_\_\_\_\_, 2001.

Sushil R. Jana

STATE OF \_\_\_\_\_) ) ss  
COUNTY OF \_\_\_\_\_)

On this \_\_\_\_\_ day of \_\_\_\_\_, 2001,  
before me a Notary Public in and for the above County and  
**Sushil R. Jana**, personally known to me, and acknowledged the  
execution of the foregoing assignment as a free act and deed  
for the purpose herein set forth.

Notary Public

212543

December 5, 2001

*By Fedex*

Sushil Jana  
801 Wilson Ave.  
Hanover, PA 17331

RE: U.S. Continuation-In-Part Patent Application entitled  
ALUMINUM METAL-CORE WELD WIRE AND METHOD FOR FORMING THE  
SAME  
Our Ref. 483471-009C1  
ITW Ref. 12979.70

Dear Mr. Jana:

I am attaching hereto a copy of my letter of November 7, 2001 together with additional copies of the attachments to that letter.

As indicated in my letter of November 7, 2001, under your employment agreement with Illinois Tool Works Inc., you are obligated to execute patent applications and assignments relating to the inventions made by you during the time of your employment. In accordance with your Employee Agreement, I am asking that you execute these documents and return them to me for filing in the United States Patent and Trademark Office. A postage-prepaid envelope is provided for returning the executed Declaration and Assignment to me.

If you are refusing to execute these documents for some reason, we would appreciate notification of that fact. In this case, please indicate your objection in writing and return that to us in the postage-prepaid envelope.

Very truly yours,



Mark P. Levy

Enclosure

cc: John H. Pilarski, Esq.

**EXHIBIT**C

December 6, 2001

*By Fedex*

Sushil Jana  
801 Wilson Ave.  
Hanover, PA 17331

RE: U.S. Continuation-In-Part Patent Application entitled  
ALUMINUM METAL-CORE WELD WIRE AND METHOD FOR FORMING THE  
SAME  
Our Ref. 483471-009C1  
ITW Ref. 12979.70

Dear Mr. Jana:

Enclosed are copies of the Declaration and Assignment that have been corrected as you requested.

Very truly yours,



Mark P. Levy

Enclosure

cc: John H. Pilarski, Esq.

**DECLARATION**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the invention entitled:

**ALUMINUM METAL-CORE WELD WIRE AND METHOD FOR FORMING THE SAME,**

described and claimed

       in the attached specification;  
X in the specification filed \_\_\_\_\_,  
as U.S. Application Serial No. \_\_\_\_\_,  
and as amended \_\_\_\_\_.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as filed and as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

**PRIORITY CLAIM**

I hereby claim foreign priority benefits under title 35, United States Code, §119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application(s) for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s) Priority Claimed

number	Country	Day/Mo/Yr	Yes	No

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below.

Application No.

Filing Date

Application No.

Filing Date

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

09/685,106	October 10, 2000	Pending
Application Serial No.	Filing Date	Status
Application Serial No.	Filing Date	Status

Send Correspondence To:

Mark P. Levy  
Thompson Hine LLP  
2000 Courthouse Plaza N.E.  
10 West Second Street, Dayton, Ohio 45402-1758

Direct Telephone Calls To:

Mark P. Levy  
(937) 443-6949

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Full name of sole or first Inventor – James M. Keegan

Inventor's Signature \_\_\_\_\_ Date \_\_\_\_\_

Residence: 764 Windsor Road, Troy, Ohio 45373

Citizenship: U.S.A.

Post Office Address: Illinois Tool Works, Inc.  
3600 West Lake Avenue  
Glenview, Illinois 60025-5811

Full name of second Inventor – Sundaram Nagarajan

Inventor's Signature \_\_\_\_\_ Date \_\_\_\_\_

Residence: 3204 Gardenia Drive, Troy, Ohio 45373

Citizenship: U.S.A.

Post Office Address: Illinois Tool Works, Inc.  
3600 West Lake Avenue  
Glenview, Illinois 60025-5811

Full name of third Inventor - Sushil R. Jana

Inventor's Signature \_\_\_\_\_ Date \_\_\_\_\_

Residence: 801 Wilson Avenue, Hanover, PA 17331

Citizenship: India

Post Office Address: Illinois Tool Works, Inc.  
3600 West Lake Avenue  
Glenview, Illinois 60025-5811

212524

Serial No.

Filed:

**ASSIGNMENT**

WHEREAS, **James M. Keegan**, of the City of Troy, County of Miami and State of Ohio; **Sundaram Nagarajan**, of the City of Troy, County of Miami and State of Ohio; and **Sushil R. Jana** of the City of Hanover, County of York and State of Pennsylvania; invented certain new and useful **ALUMINUM METAL-CORE WELD WIRE AND METHOD FOR FORMING THE SAME** (Docket No.483471-009C1) for which I/we executed an application for letters patent of the United States;

AND WHEREAS, **Illinois Tool Works Inc.**, a corporation of the State of Illinois, with a place of business at 3600 West Lake Avenue, Glenview, Illinois, hereinafter called the Assignee, is desirous of acquiring the entire right, title and interest in and to said application and the inventions therein disclosed and any letters patent that may issue thereon;

NOW, THEREFORE, in consideration of the sum of One Dollar (\$1.00) and other valuable consideration, receipt whereof is hereby acknowledged, I/we hereby sell, assign and transfer unto said Assignee, its successors and assigns, the entire right, title and interest in and to said application and any divisions or continuations thereof, and the inventions therein disclosed, and any improvements thereon, and any patent or patents that may be issued or reissued thereon, and I/we hereby authorize and request the Commissioner of Patents and Trademarks to issue any letters patent thereon, and reissues thereof, to said Assignee, its successors and assigns; and I/we hereby authorize said Assignee, its successors and assigns, to file in its own name applications for patent in foreign countries in connection with the inventions hereby transferred, under the International Convention claiming the priority of said United States application or otherwise, and to secure in its own name the patent or patents issued thereon; and I/we hereby agree that, upon request, I/we will sign all papers, and make all rightful oaths, and do all acts which said Assignee, its successors or assigns, may consider necessary in connection with said United States application, and in connection with any other United States or foreign applications that may be filed in connection with said inventions, and with any improvements thereon, and in connection with any patents issued or reissued thereon.

IN TESTIMONY WHEREOF, I hereunto set my hand and seal this \_\_\_\_\_ day of \_\_\_\_\_, 2001.

\_\_\_\_\_  
James M. Keegan

STATE OF \_\_\_\_\_ )  
                    ) ss  
COUNTY OF         )

On this \_\_\_\_\_ day of \_\_\_\_\_, 2001,  
before me a Notary Public in and for the above County and  
**James M. Keegan**, personally known to me, and acknowledged  
the execution of the foregoing assignment as a free act and  
deed for the purpose herein set forth.

\_\_\_\_\_  
Notary Public

IN TESTIMONY WHEREOF, I hereunto set my hand and seal this  
\_\_\_\_\_ day of \_\_\_\_\_, 2001.

\_\_\_\_\_  
Sundaram Nagarajan

STATE OF \_\_\_\_\_ )  
                    ) ss  
COUNTY OF         )

On this \_\_\_\_\_ day of \_\_\_\_\_, 2001,  
before me a Notary Public in and for the above County and  
**Sundaram Nagarajan**, personally known to me, and acknowledged  
the execution of the foregoing assignment as a free act and  
deed for the purpose herein set forth.

\_\_\_\_\_  
Notary Public

IN TESTIMONY WHEREOF, I hereunto set my hand and seal this  
\_\_\_\_ day of \_\_\_\_\_, 2001.

Sushil R. Jana

STATE OF \_\_\_\_\_ )  
                    ) ss  
COUNTY OF         )

On this \_\_\_\_\_ day of \_\_\_\_\_, 2001,  
before me a Notary Public in and for the above County and  
**Sushil R. Jana**, personally known to me, and acknowledged the  
execution of the foregoing assignment as a free act and deed  
for the purpose herein set forth.

Notary Public

212543

**EXHIBIT****D**

December 18, 2001

*By Fedex*

Sushil Jana  
801 Wilson Ave.  
Hanover, PA 17331

RE: U.S. Continuation-In-Part Patent Application entitled  
ALUMINUM METAL-CORE WELD WIRE AND METHOD FOR FORMING THE  
SAME  
Our Ref. 483471-009C1  
ITW Ref. 12979.70

Dear Mr. Jana:

This letter is further to my letter of December 6, 2001 in which I enclosed a copy of the corrected Declaration and Assignment for filing in the above-identified application. It was my understanding when we talked on the telephone before sending you these documents that with the corrections, you were agreeable to signing them and returning them to me.

Hobart Brothers would greatly appreciate your cooperation in this regard and that you return the signed documents as soon as possible.

Very truly yours,



Mark P. Levy

cc: John H. Pilarski, Esq.

January 7, 2002

*By Fedex*

Sushil Jana  
801 Wilson Ave.  
Hanover, PA 17331

RE: U.S. Continuation-In-Part Patent Application entitled  
ALUMINUM METAL-CORE WELD WIRE AND METHOD FOR FORMING THE  
SAME  
Our Ref. 483471-009C1  
ITW Ref. 12979.70

Dear Mr. Jana:

It is now one month since my letter of December 6, 2001 with which I provided you corrected copies of the Declaration and Assignment. If you do not intend to cooperate with Hobart Brothers, I would appreciate it if you would indicate this below and return this letter to me in the postage pre-paid envelope which is enclosed. Otherwise, I would appreciate it if you would return signed copies of the corrected Declaration and Assignment (additional copies are provided). If you do not respond to this letter by January 21, 2002, I will proceed to initiate legal action in the U.S. Patent and Trademark Office without your signature.

Very truly yours,

  
Mark P. Levy

cc: John H. Pilarski, Esq. (w/o encl.)

I do not intend to sign the Declaration and Assignment.

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Sign

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Date

**RECEIVED****JAN 14 2002**Dated 8<sup>th</sup> January, 2002

Sushil R Jana  
801 Wilson Avenue  
Hanover, PA 17331

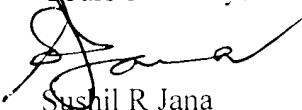
INTELLECTUAL PROPERTY  
LAW GROUP  
THOMPSON HINE LLP

RE: Continuation-in-Part Application entitled : ALUMINUM METAL CORE WELD  
WIRE AND METHOD FOR FORMING THE SAME  
ITW REF: 12979.70

Dear Mr Levy,

On going through the text of the matter (the invention), I find that I do not have the background data with me to validate the information that I will be signing for. Unfortunately, I neither have access to the data , nor my Co-Inventors, who are in possession of the data at this time, are sharing the data with me. Under the circumstances, I do not see how I can authenticate any data , which , as a scientist, it is my bounden duty to verify and vouch for before signing. As a legal professional, I do not expect you to understand the technology aspects, but I am sure that you and ITW will appreciate that a technologist and inventor must verify all facts before submitting to any learned society such as the Patent Office.

Yours sincerely,



Sushil R Jana

January 25, 2002

By Fedex

Sushil Jana  
801 Wilson Ave.  
Hanover, PA 17331

RE: U.S. Continuation-In-Part Patent Application entitled  
ALUMINUM METAL-CORE WELD WIRE AND METHOD FOR FORMING THE SAME  
Our Ref. 483471-009C1  
ITW Ref. 12979.70

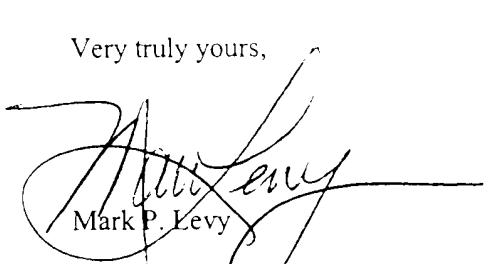
Dear Mr. Jana:

In response to your letter dated January 14, 2002, our client is unwilling to comply with your request that they provide the confidential and proprietary raw data in hard copy form, since you now work for a major competitor of Hobart Brothers. Your co-inventors, Jim Keegan (332-5282) and Sundaram Nagarajan (332-5282), both attest as to the accuracy of the substance of the patent application and are willing to discuss the matter in detail so that you are satisfied as to the content of the application. You may call them collect, if necessary.

In any event, it is expected that you are familiar with the subject matter of the application and that you are able to sign off on the application in its current form. Since you have an agreement with Illinois Tool Works obligating you to assign the invention, we expect that you will fulfill such obligation. We note that you executed the original version of the application and you are being asked to execute this continuation-in-part application because you are an inventor on the original application subject matter carried forward into this application.

If we do not hear from you by **February 10, 2002**, we will presume that you have refused to sign the application and the assignment and will petition the U.S. Patent and Trademark Office, explaining that you have refused to comply with your obligation to sign the papers and the assignment, and thus establish that the invention is owned by Illinois Tool Works Inc. nonetheless.

Very truly yours,



Mark P. Levy

cc: John H. Pilarski, Esq.  
James Keegan  
Sundaram Nagarajan

Mark.Levy@ThompsonHine.com Fax 937.443.6635 Phone 937.443.6949

ceb 232455

EXHIBIT

RECEIVED

FEB 06 2002

INTELLECTUAL PROPERTY  
LAW GROUP  
THOMPSON HINE LLP

Dated 5<sup>th</sup> February, 2002

Sushil R Jana

801 Wilson Avenue  
Hanover, PA 17331

Mark P Levy  
Thompson Hine LLP  
2000 Courthouse Plaza N.E.,  
10 West Second Street  
Dayton, OH 45402

RE: Continuation-in-Part Patent Application entitled : ALUMINUM METAL CORE  
WELD WIRE AND METHOD FOR FORMING THE SAME  
ITW REF: 12979.70

Dear Mr Levy,

I have gone through your letter of 25<sup>th</sup> January, 2002 and would respectfully reply as below.

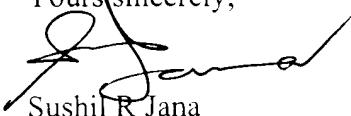
I think that somehow you have not been able to understand what I have to say.

Let me be clear first of all that I have absolutely no hesitation or objection to assigning to Hobart or Illinois Tool Works any patent or intellectual work that was carried out there with their support.

What I insist on is that I would not like to sign and thereby vouch for anything which I have not verified myself personally and made sure about its correctness , accuracy, and so forth, particularly when it is being submitted to such a learned society as the Patent Office. I need a hard copy to verify all the facts and matter of the invention that I will be signing for and also to refer to what has been submitted previously and what is being added now. For your and everybody's information, I do not have any data, papers, or any other thing with me on this project and I would be doing great injustice to myself as well as the scientific community if I sign and vouch for it blindly.

If it helps you, I will be prepared to send a copy of this letter to the Patent Office.

Thank you  
Yours sincerely,



Sushil R Jana